THE NEWSLETTER FOR SEATUG

SWYM

SEPT/OCT
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NUMBER 6

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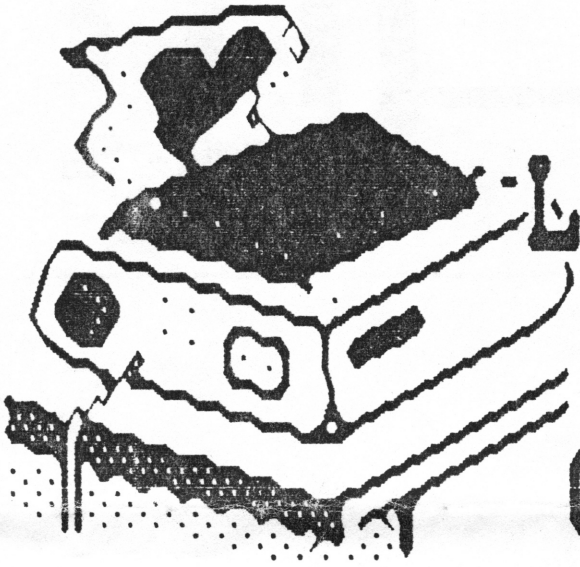

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EDITOR
Chuck Kereluck

PRESIDENT
Derryck Turner

V. PRESIDENT
Gerry Desmarais

SECRETARY
Malcolm Post

TREASURER
Dave Battershill

LIBRARIAN
Dale Fritz

for general info_

Derryck Turner
10909 NE 45th St.
Kirkland, WA
98033

for articles/ads submissions_____

Chuck Kereluck
9013 32nd Ave NE
Seattle, WA
98115

for newsletter exchange_____

Robert Cazares
601 E. Roy St.
Seattle, WA #102
98102-4646

for memberships & renewals, mail $10 to_____

Dave Battershill
P.O. Box 64462
Tacoma, WA 98464

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SWYM

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NEXT MEETING

SEPT 5, 1991

7:30 P.M.

LOCATION

UNIVERSITY FEDERAL SAVINGS BANK

8517
35th Ave NE
Seattle

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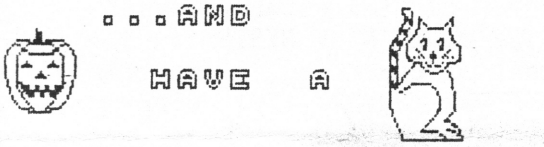

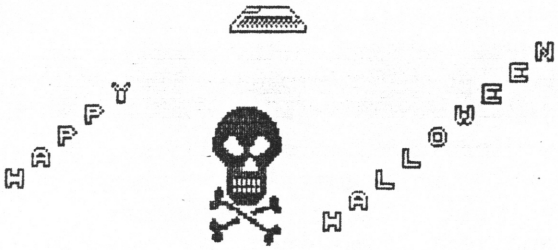

Random Bits

by Chuck Kereluck

NEXT THING YOU KNOW THEY'LL BE GIVING THEM AWAY

How many of you bought a ZX81 when they were going for $179.95 in kit form? How many of you patiently waited until Timex got into the picture with Sinclair and offered their clone version, fully assembled for "only" $99.95??

Well, if you don't know yet, be prepared for a shock. And if you haven't a TS1000 yet and wanted one, be prepared for the best news, ever.

Hacker Electronics, of 21016 Devonshire St., Chatsworth, CA 91311 (878-882-7980) is offering untested TS1000s for a buck. That's right -- one dollar. And if you need a pre-tested, working one, it's only $2.00! These units are "bare bones" i.e., no power supply, no TV/Computer switch, no cables, no manual and no box. They are bubble-wrapped.

At this price, they move quickly. Large lots are being shipped to some clubs. A good move would be to call for availability.

I wonder if any of us original buyers can get partial reimbursement?

NEWS FROM THE OTHER DISK SYSTEM

A recent letter and newsletter from Andy Hradesky of Colorado Springs, who now publishes Timelinez, brought some very interesting facts to this editor's attention.

Timelinez, as other newsletter editors and subscribers know, was being published via a generous grant by American Micro Systems of San Jose, California. Unfortunately, they decided to pull their resources elsewhere and left Timelinez on the verge of the Twilight Zone. Enter Andy Hradesky. Correctly deciding that Timelinez was too good to let expire, he took over, financing the whole thing himself! This IS a good newsletter, and if you're not getting it already, mail a $9 check to Timelinez, P.O. Box 1312, Pacifica, CA 94044(attn: George Mockridge).

Anyway, about that "other" disk system. I'm talking about the Zebra FDD system, which, it so happens is exactly compatible with Timex's original TOS disk system. Remember Timex of Portugal? They peddled the TOS system after Timex of USA pulled out. You'll recognize these systems by the 2068 interface adapter board, 2 silver boxes (power supply and controller) and a 3-inch (not 3-1/2!) single-sided disk drive. Zebra FDD units are packaged in a long, black case w/two drives and P/S. The disks are a bit scarce and expensive, but 5-1/4 (both single and double-density) drives work great. 3-1/2s work well, too.

For some odd reason, they didn't rise to #1 popularity, but people who use them swear by them. For one thing, they exhibit some very interesting characteristics. Like being able to scrap that extra monetary expense for a printer interface. That's right! If you choose a serial printer, you can use the existing ports provided with the system! Same with those 2050 300-baud modems. Don't be forever stuck in the slow lane! I recently became aware of a hardware mod to the TOS system, enabling use of Spectrum disk software! An Extended BASIC (also from Portugal) is said to exist for this system allowing screen sizes of 32, 40 or even 80 columns! Not only that, but various column-sized windows can be displayed and used on the same monitor screen! "Windows" for the 2068?? And don't let me forget to mention running Wordstar or DBASE2. On a PC? No, silly, on the 2068, using CP/M!

In case any of this gets to you, contact Jay Seigel. He has recently launched a new "FDD Newsletter" that should tell all. A measly ten bucks per year is all he asks. His address is 1274 49yh Street #821 Brooklyn, NY 11219-3091. Or, you can call 718-853-8128.

Why all this info, since the Larken system seems to be #1? TOS is still around, being used. I use it, myself. If we ever get to the point of developing an all-format-compatible disk system, we need to know what the

others are like.

Which brings us to this month's Feature Article. TOS user Mike Finn shows how to get into the guts of that TOS using CP/M. Remember: If you can look at it, you can change it!

COMING ATTRACTIONS

On the all-compatible-system front, Ken Goods will be reporting on an exciting PC development, in the very near future. This is the way all microcomputer systems are headed, he believes, and let's hope he's right!

SEATUG Librarian, SWYM writer and unique-program developer Dale Fritz will bedazzle you with alien life-form mutation possibilities, with a complex BASIC program called FLIB.

Ever wonder who is left in the Timex/Sinclair commercial arena? When someone gives you a copy of some software, do you know if it's "hot" or not? Next month, we'll reveal who can and who can't give you the legal willies!

Stay tuned.

ATTENTION BASIC PROGRAMMERS

Z E B U

Zaxxes Extra Basic Utilities

GIVES YOU 38 NEW COMMANDS AND FUNCTIONS FOR THE 2068

UP/DOWN ARROW KEYS IN EDIT LINE: TRUNCATE EDIT LINE LEFT OR RIGHT OF CURSOR:FAST DELETE KEY FIXES TIMEX BUG:DELETE A WHOLE STATEMENT BETWEEN COLONS WITH ONE KEY STROKE:PRINT 5 TEXT SIZES WITH MULTIPLE CHARACTOR MODIFIERS: 16 BIT POKE:16 BIT PEEK:TRUE 16 BIT AND/OR/XOR OPERATIONS:BLOCK MOVE/SWAP/COPY BYTES,WITH BANK SWITCHING AVAILABLE:LIST A LINE OR A RANGE OF LINES:MERGE BASIC LINES:SEARCH BASIC LINES:SET START OF BASIC TO ANY LINE OR RESET TO ORIGINAL FIRST LINE:GET CRITICAL PROGRAM PARAMETERS:HEX TO DECIMAL TO HEX CONVERSION: DECIMAL TO BINARY BIT PATTERN: READ ANY NUMBER OF CHARACTORS FROM SCREEN TO A STRING VARIABLE :ELECTRIC INK AUTO ROTATES INK COLORS AT SELECTED AREAS:MORE

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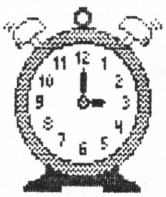

MINUTES WITH SEATUG

by Malcolm Post, Secretary

August 1, 1991

The meeting was called to order at 7:52 P.M. by President Derryck Turner. There were 8 members present.

Dave Battershill, the Treasurer reported a balance of $375.33 in the Treasury. This includes the due of two new members and the proceeds of last months auction.

Derryck had to leave early due to another commitment, so the business portion of the meeting came to an end and discussion of various topics of interest followed.

Dave mentioned that he had gotten together with Bill Miller of Cupertino and had received disks containing copies of the SLIX Newsletter and a copy of EMAX. Dave has offered to make copies for those of us who desire them, just bring three 360K or 720K disks (IBM compatible format).

A discussion came up as to how we could accommodate out of town members in our auctions. It was suggested that a list of the items to be auctioned always be published at least a month before the auction. Those out of town could make a written bid for any items desired. This would be known only by the auctioneer, who would consider them as proxies to bid on the item up to the limit specified in the letter. The money would have to accompany the bid. If the item was sold for less than the amount bid by the proxy the difference would be returned to the out of town bidder. Shipping charges would be the responsibility of the recipient.

The details of this were not discussed. If you have any other suggestions on this subject, please bring them to the next meeting.

Pat reported that he had not yet been able to contact Brad about the EPROM software, but will continue his efforts.

There being no other business, the meeting was adjourned at 9:30.

FLIB EVOLUTION

by Dale Fritz, SEATUG

Imagine an abstract sea, inhabited by creatures called Finite Living Blobs, or Flibs. Each Flib is equipped with a simple decision making apparatus. The Flibs inhabit a primordial digital soup of 0's and 1's in a constant repeating stream. The changes in the stream must be predicted accurately by the flib if it is to survive.

Flibs that predict poorly die out, The best predictors breed and create a Flib that sometimes improves on the performance of its parents. Cosmic rays bombard the Flibs genes, changing their ability to predict. Eventually, a line of perfect predictors evolve.

Flibs were created by A. K. Dewdney in Scientific American, Computer Recreations, Nov 1985, pg 21. (A copy can be faxed to your local library from the main Seattle Branch.) Flibs and their evolutionary tendencies are much more fun and satisfying to watch than other genetic programs.

Each Flib consists of 12 digits called a chromosome. Each digit is called a gene. The Flibs decision ability lies in its genes.

A Flib can be in one of three states. State 1 means only the first four genes are being used. State 2 uses the next four genes and state 3 the last four. When the program begins, all Flibs are in state 1 and each Flib receives a stream of 0 and 1 signals from the environment. It responds with outputs of 0's and 1's in which it tries to predict the next incoming signal.

Example: An input signal is 0100110100....

The Flib chromosome is 031213021101

Note: State 1 is 0312
State 2 is 1302
State 3 is 1101

When a Flib is in state 1 and receives a 0, the first gene is the output and the second gene is the next state. (For our example, the output is 0 and the next state is 3) When in state 1 and a 1 is received, the 3rd gene is the output and the 4th gene isthe next state. The next four genes (5,6,7,8) have the same functions as genes (1,2,3,4) while in state 2. The last four genes (9,10,11,12) have the same functions as genes (1,2,3,4) while in state 3.

For the example above:

INPUT STREAM	STATE	OUTPUT PREDICT'n	NEXT STATE
0	1	0*	3
1	3	0	1
0	1	0	3
0	3	1	1
1	1	1	2
1	2	0	2
0	2	1	3
1			

*Wrong

Score: 6 correct

Flibs are rated by their score and when it is time to breed, the top Flib mates with one of the others at random. The offspring, with genes from each parent, replaces the poorest scoring Flib.

A mutation from cosmic rays can change a gene and thus change the predicting power of any Flib. Breeding, however, favors the most skillful Flib. Eventually, one of the Flibs is able to predict the environmental signal perfectly or almost so.

The program FLIB EVOLV uses 5 Flibs and an environmental signal stream of 51 digits.

Step 1. The five Flibs are shown with their chromosomes.

2. Each Flib is scored on its 50 predictions. The predictions are shown with an asterisk at each error.

3. The Flibs are reordered by their scores.

4. A Breeding routine occurs with a probability of .25.

5. A cosmic ray strikes one of the Flibs if breeding does not

cont'd on pg 7...

EXTRA!

TOS REVEALED BY CP/M!

by Mike Finn

Section 1.B.1 of the Zebra Disk Drive Technical Manual describes the function of the 1K ROM contained in the controller. Whenever you power-up the controller or cold-boot it using the reset button, the ROM is activated. The ROM memory has a small program which reads sector 0 of track 0 of disk A into RAM, beginning at address 3F00h. This bootstrap ROM can be paged in or out by using bit 6 of controller port 0E0h. When this bit is set, the ROM is paged out and replaced by RAM. When reset, it is paged in.

By using bit 6 of port 0E0h in a CP/M controller, we can see for ourselves just what this bootstrap ROM program looks like. We will write a small Z80 assembly program, ROM.COM, to page in this ROM, copy the contents for later inspection and page normal RAM memory back in.

First, load up your favorite CP/M debugging tool. Since our controllers use the Z80A CPU, I'll be using ZSID.COM, which used the Z80 mnemonics, for this demonstration.

We'll load up ZSID.COM just by typing ZSID at the CP/M prompt A>. After it is loaded, use the assemble command A100 at the ZSID # prompt. This will allow us to type in the following short program.

```
0100 DI
0101 LD HL,0110
0104 LD DE,0A00
0107 LD BC,0020
010A LDIR
010C JP A000
010F NOP
0110 IN A,0E0
0112 RES 6,A
0114 OUT 0E0,A
0116 NOP
0117 NOP
0118 NOP
0119 LD HL,0000
011C LD DE,0B00
011F LD BC,0400
0122 LDIR
0124 IN A,0E0
0126 SET 6,A
0128 OUT 0E0,A
012A NOP
012C NOP
012D EI
012E LD HL,0B00
0131 LD DE,0100
0134 LD BC,0400
0137 LDIR
0139 CALL F6CC
013C RET
013d .
```

We exit from the assemble command by typing a control C(^C). This will let you leave ZSID and do a warm boot to restore the CCP module.

As soon as this is done, give the following command at the normal A> prompt: SAVE 1 ROM.COM.

This will put our program to disk. Now to run our program, just give the name of it at the normal CP/M A> prompt: ROM.

As soon as the program finishes running and gives you the familiar A> prompt, give the command: SAVE 4 BOOT.ROM

This will save the boot ROM to disk.

To examine this code, we one again use ZSID.COM at the A> prompt, but this time we use the name of our code file as part of the command: ZSID BOOT.COD.

We can now examine this code which we now have at address 0100h with the ZSID list command, L100. Don't forget that this code normally starts at 0000h rather than 0100h, so be sure to mentally transcribe the addresses down by 100h.

HOW THE PROGRAM WORKS

When we page in the boot ROM, it will replace the RAM from 0000h to 03FFh, so we must first move the working part of our program to higher memory. The instructions at 0101h through 010Ah push the working code, which resides at 0119h through 013Ch, up to A000h. The next instruction jumps us to the code now located at A000h. The first thing we do there is to get the contents of the controller

port, set bit 6 and load this back into port 0E0 to activate the boot ROM. I put NOP instructions just in case a small delay is needed to insure that the ROM is paged in before we continue with that program, since I had no information on the timing involved.

With the ROM now paged in, we relocate the contents to high memory at B000h. The next instructions undo the paging and restore the RAM. Since we want to save the ROM contents without having to save all of that high memory location, I relocated the contents down to 0100h. This is the location that the CCP SAVE command begings saving from. The call to location F6CC is a direct call to the warm boot routine which allows return to CP/M. I did it this way because I wasn't sure if the prior contents of locations 0000 through 00FFh of RAM would be lost by paging in the boot ROM in their place. I decided a warm boot would be the safest exit.

After the warm boot is complete, we are left with our 1K boot file beginning at location 0100h and we save it to disk by using the SAVE command for later inspection.

FLIBS cont'd...

take place.

6. If no score is 48 or above, steps 1 thru 5 are repeated.

Only the changed chromosome is evaluated so a cycle is quite fast. One can watch the changed chromosome and how its predicting ability evolves. Some runs gave a perfectly scoring chromosome in as few as 4 cycles. In another case, the program ran for an hour and never gave a score higher than 42 or 50. The program is a spellbinder and I have found myself rooting for some Flibs over others.

FLIB EVOLVE was originally coded by Henry Sonneborn, Larchmont, NY, in ACCESS magazine, Jul/Aug 1986. The program was recoded for the 2068 and will be published in the next issue of SWYM. If you are intrigued, the program is also in the SEATUG library.

SWYM

SWYM is the official newsletter of the Seattle Area Timex Users Group. It is published bi-monthly with receipt due before the 1st Thursday of the expected month.

SUBSCRIPTIONS for non-Seattle area users are only $10/yr, to SWYM, c/o Dave Battershill, Treasurer, P.O. Box 64462 Tacoma, WA 98464. Free exchanges are made between other related clubs via the newsletter exchange program.

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ARTICLE CONTRIBUTIONS are welcomed and encouraged. A textfile from MSCRIPT, TASWORD or a Pixel Print column is preferable. If used, make a tape copy and mail to Chuck Kereluck. For repeat contributers, mailed tapes will be returned. For modem users, articles (in either 2068 or ASCII format) may be uploaded to PHOTOSYNTHESIS (206)323-2433. 24-hour access. 8, 1, N.

Typed, 8-1/2" X 11" text is acceptable. If diagrams are included, use a large mailer to accommodate the unfolded size. Articles supplied on ZEBRA FDD or IBM PC 5-1/4" or 3-1/2" disks are also acceptible. These will be returned to the author.

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